CLAIMS

At least the following is claimed:

1. A method of producing a three-dimensional object, comprising the steps of:

(a) providing criteria about the three-dimensional object, the three-dimensional object is divided into complete layers and partial layers, the criteria indicate that after a specified number of complete layers are formed a partial layer is formed, the partial layer includes a shell layer and does not include an interior layer, and the complete layer includes the shell layer and the interior layer;

(b) forming a base layer, the base layer includes a shell layer and does not include an interior layer;

(c) planing the base layer;

(d) forming a complete layer according to the criteria;

(e) planing the complete layer;

(f) forming a partial layer according to the criteria;

(g) planing the partial layer; and

(h) repeating steps (d) through (g) until the three dimensional object is formed.

2. The method of claim 1, further comprising:

monitoring waste produced for each planing; and

modifying the criteria if the waste produced is above a waste threshold.

3. The method of claim 1, further comprising:

determining a height of the shell layers and a height of the interior layers; and

modifying the criteria if the height of the interior layers is greater than or equal to the height of the shell layers, wherein the criteria would indicate to form the partial layer as the next layer formed.

4. The method of claim 1, wherein the specified number of complete layers formed before the partial layer is formed is based on a calibration criteria that includes an average height of the interior layer before planing and an average height of the shell layer after planing, and the specified number can be determined based on the relationship between the average height of the interior layer before planing and the average height of the shell layer after planing.

5. A method of producing a three-dimensional object, comprising the steps of:

providing criteria about the three-dimensional object, the three-dimensional object is divided into layers, the layers include a shell layer and an interior layer, the shell layer includes at least one shell voxel, the interior layer includes at least one interior voxel, the criteria indicate selected interior voxels of the at least one interior voxels to form for each layer, the criteria indicate a sequence in which to form each layer, and the selected interior voxels for each layer in the sequence include a different combination of interior voxels;

forming a plurality of layers according to the criteria;

planing at least one layer; and

forming the three-dimensional object.

6. The method of claim 5, wherein the selected interior voxels of each layer include less than 100% of the interior voxels of each layer.

7. A method of producing a three-dimensional object, comprising the steps of:

providing a criteria for forming the three-dimensional object, the three-dimensional object includes a plurality of layers, each layer includes layers selected from a shell layer and an interior layer, the shell layer includes at least one shell voxel, and the interior layer includes at least one interior voxel;

forming and planing the layers in an iterative manner using the criteria provided;

controlling an amount of waste produced by using the criteria provided; and

forming the three-dimensional object.

8. The method of claim 7, wherein forming and planing include:

(a) forming a base layer, the base layer includes a shell layer and does not include an interior layer;

(b) planing the base layer;

(c) forming a complete layer according to the criteria, the complete layer includes the shell layer and the interior layer;

(d) planing the complete layer;

(e) forming a partial layer according to the criteria, the partial layer includes a shell layer and does not include an interior layer;

(f) planing the partial layer; and

(g) repeating steps (d) through (g) until the three dimensional object is formed.

9. The method of claim 7, wherein the criteria indicate selected interior voxels of the at least one interior voxels to form for each layer, the criteria indicate a sequence in which to form each layer, and the selected interior voxels for each layer in the sequence include a different combination of interior voxels.

10. A system for producing a three-dimensional object, comprising:

a layer forming system operative to:

implement criteria for forming the three-dimensional object, the three-dimensional object includes a plurality of layers, each layer includes layers selected from a shell layer and an interior layer, the shell layer includes at least one shell voxel, and the interior layer includes at least one interior voxel;

form the layers in an iterative manner according to the criteria;

plane at least one layer in a manner according to the criteria;

control waste produced by controlling the formation of the layers using the criteria provided; and

form the object.

11. The system of claim 10, wherein the layer forming system includes a waste monitoring system operative to monitor the waste produced during the planing of each layer.

12. The system of claim 10, wherein the criteria indicate that after a specified number of complete layers are formed before a partial layer is formed, the partial layer includes a shell layer and does not include an interior layer, the complete layer includes the shell layer and the interior layer.

13. The system of claim 10, wherein the criteria indicate selected interior voxels of the at least one interior voxels to form for each layer, the criteria indicate a sequence in which to form each layer, and the selected interior voxels for each layer in the sequence include a different combination of interior voxels.

14. The system of claim 10, wherein the layer forming system includes a dispensing system operative to form the layers, and a planing system operative to plane each layer.

15. The system of claim 10, wherein the layer forming system includes a height monitoring system operative to measure the heights the layers.

16. The system of claim 15, wherein the layer forming system operative to change the criteria when the height monitoring system measures that a height of the shell layers is less than or equal to a height of the interior layers, so that the criteria indicate to form an additional shell layer, wherein after the additional shell layer is formed the height of the shell layers is greater than the height of the interior layers.